



Microturbine Double-Effect Absorption Chiller

The United Technologies and Capstone CHP Packaged System Team

Benefits of CHP

Capital Cost Reduction

Packaged systems can cut CHP system capital costs by 15% to 30%

Shorter & Less Expensive Installation

IES can reduce CHP system installation time by as much as two-thirds, and provide corresponding installation cost savings.

Replicability

System designs are suitable for multiple applications in facilities around the country.

Optimize Facility Energy Use

Packaged systems allow facility operators to manage power generation, cooling and heating to optimize energy use as well as reduce electricity use during peak periods.

Simplified Systems

The use of exhaust-fired absorption chillers eliminates the need for steam/hot water generation equipment.

Adaptability

The small size of this system means it is especially well-suited to retrofit applications and can augment existing systems.

Experience the Benefits – Become a Demonstration Site

Considering a CHP system? The U.S. Department of Energy is looking for businesses interested in serving as demonstration sites for packaged CHP systems. For more information, please visit www.eere.energy.gov/chp/hospitals.

Project Overview

United Technologies, along with Capstone Microturbine Corp., is accelerating the development of packaged Integrated Energy Systems (IES) by fast-tracking preparations for a test facility. The team is analyzing factors that influence market success by developing a screening tool and optimizing the modular system to achieve significant savings.

Benefits of an optimized IES include:

- Achieving fuel utilization > 70%
- Reducing CO₂ emissions
- Expanding customer choice for reliable, secure power
- Providing customers with electricity, building heating/cooling, and hot water
- Avoiding outages and infrastructure investments
- Reducing utility costs

Up to 50% of building services can be met using "free" waste heat

	%LOAD (TYP)	TYPICAL SYSTEM	CHP SUITABILITY FOR INSTALLED BASE	
Space Heating	28	Gas Boiler (large, > 25000 ft ²) Gas Furnace (small)	Large buildings: waste heat driven hot water (especially for perimeter heating)	Y
Space Cooling	11	Vapor compression chiller (large) Direct expansion (small)	Large buildings: waste heat driven absorption chiller to produce chilled water. Use existing fan coils/air handlers	Y
Lighting	29	Standard fluorescent lighting	None	N
Hot Water	9	Gas Boiler (large) Gas Water Heater (Small)	Waste heat driven	Y
Other	23	Includes computers, elevators, telecommunications etc.	Electric loads	N



UTC Power

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Objectives

- Define modular systems that provide an optimum IES with increasingly sophisticated tools
- Use tools to assess the effects of application and system variables
- Apply screening to selected building types to match energy requirements and product designs and controls for use in customized integrated energy systems

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